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Scientists, Engineers, and Technicians in Trade and Regulated Industries: 1994

Detailed Statistical Tables

Division of Science Resources Studies
Directorate for Social, Behavioral and Economic Sciences

National Science Foundation

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Scientists, Engineers, and Technicians in Trade and Regulated Industries: 1994

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Division of Science Resources Studies
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National Science Foundation NSF 98-305

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GENERAL NOTES

In this report, estimates are presented of the total number of positions filled by scientists, engineers, and technicians employed in trade and regulated industries in 1994. The estimates were developed from the Occupational Employment Statistics (OES) Survey, a Federal/state program under which national and state estimates are generated of employment by industry for nonfarm wage and salary workers. The Bureau of Labor Statistics (BLS) of the U.S. Department of Labor has primary responsibility for developing OES survey procedures and for providing states with technical guidance and assistance with survey problems. State Employment Security Agencies implement the survey at the state level and prepare current and projected employment statistics for these labor markets. Some states also prepare substate estimates.

The National Science Foundation has enhanced the BLS effort since 1977 by financing the collection of detailed estimates on the types of scientific and technical jobs filled by industry. Analysis of this information yields insight into the dynamics of the labor market.

Industries identified in the tables of this report are from the "Numerical List of Short Titles" in the *Standard Industrial Classification (SIC) Manual*, revised edition. The numbers of scientists, engineers, and technicians for a few industries at the 2-digit SIC level (tables A-2 and A-4) in this 1994 edition, as well as in the 1991 edition, differ from those in the prior (1988) report on trade and regulated industries, because the industries were recoded between the 1986 and 1989 surveys. Starting with the 1991 edition, greater noncomparability occurred at the 3-digit level of detail (tables A-1, A-3, A-4, and A-5) because of more extensive recoding. The numerous industry title changes did not affect the comparability of the 1991 and 1988 occupational estimates.

For the reasons outlined above, estimates in the tables of this 1994 report and the 1991 report should be compared with those for 1988 (and earlier years) only after consulting the 1987 SIC revisions to determine industry comparability.

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TECHNICAL NOTES[1]

General

National estimates of occupational employment in the scientific, technical, and engineering fields for trade and regulated industries[2] were based on data from the 1994 Occupational Employment Statistics (OES) Survey. The OES Program is a Federal-state cooperative effort in which each state conducts its own survey to produce its estimates. The Bureau of Labor Statistics (BLS) provided each state with survey procedures, technical support, and troubleshooting assistance. The government agencies participating in this program were the 50 State Employment Security Agencies (SESAs) plus the District of Columbia, Puerto Rico, Guam, and American Samoa. For this report, estimates at the national level were produced by BLS-Washington based on data from the fifty states plus the District of Columbia. State-level estimates can be obtained from the individual SESAs.

Scope of Survey

The BLS trade and regulated industries survey covers establishments in SIC codes 40-42, 44-59, and 823. [SIC 823 —"Libraries" —is not reported herein.] The reference dates of this survey were the weeks that included April 12, May 12, or June 12, 1994. The reference date for any particular unit in the survey depended on its SIC code. See the chart below for those SICs covered in this publication..

SIC CODE	REFERENCE DATE
40	May 12
41	May 12
42	May 12
44	Apr 12
45	June 12

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[1] Portions of the material in these Technical Notes have been excerpted or reproduced from U.S. Department of Labor, Bureau of Labor Statistics: *Occupational Employment Statistics, 1994* (Bulletin 2468, March 1996, "Appendix A. Survey Methods and Reliability of Estimates," pp. 94-98).

[2] A note on industrial classification nomenclature: Industries denoted as "Trade and Regulated Industries" herein are referred to as "Nonmanufacturing Industries" in BLS publications. [See "Scope of Survey" below for listing of industries covered.] In NSF publications "Nonmanufacturing Industries" refer to SIC codes 10, 12-17, 60-65, 67, 70, 72, 73, 75, 76, 78-80 (except 806), 81, 83, 84, 86, 87, and 89. In BLS publications the industries listed above are called "Mining, Construction, Finance, and Services Industries" and are covered by the same survey cycle that NSF reports as "Nonmanufacturing Industries." In the NSF data brief announcing this publication ("Services Sector S&E Employment Rises, Then Falls Sharply As Engineering and Technician Jobs Are Cut" — NSF 97-322) industries referred to herein as "Trade and Regulated Industries" are termed "Services Industries" to more clearly connote to readers the industries they encompass.

SIC CODE	REFERENCE DATE
46	June 12
47	Apr 12
48	May 12
49	Apr 12
50	June 12
51	June 12
52	June 12
53	June 12
54	June 12
55	June 12
56	June 12
57	June 12
58	June 12
59	June 12

Method of Collection

Survey schedules were initially mailed out to the personnel offices of almost all sampled establishments. Some of the larger establishments, however, received a personal visit.

Two additional mailings were sent to nonrespondents at approximately six-week intervals. Nonrespondents that were critical to the survey because of their size received a telephone call or a personal visit followup.

Sampling Procedures

The sampling frame for the OES survey was a list of units reported to the state's Unemployment Insurance (U.I.) files. The reference date of the sampling frame was the second quarter of 1993.

Within each state, the universe was stratified by SIC and size class where size class was defined as follows:

Size Class	Employees
1	1-4
2	5-9
3	10-19
4	20-49
5	50-99
6	100-249
7	250-499
8	500-999
9	1000+

U.I. reporting units with fewer than 5 employees were not sampled in most states; instead, units with 5-9 employees were assigned a larger weight to account for employment in size class 1. U.I. reporting units with 250 or more employees were included in the sample with certainty. The sample sizes needed to calculate state estimates at a targeted relative standard error of 10, 15, or 20 percent for one standard deviation were developed for each SIC across its noncertainty size classes. The sample size for each SIC was determined by calculating averages of occupational rates and averages of coefficients of variation (CVs) for a given set of typical occupations using data from the previous survey round. Within each SIC, the sample size was then allocated proportionally across size classes based on size class employment. The sample was selected systematically with equal probability within each state/(area)[3]/SIC/size class cell.

The states were given the option of selecting three target relative standard errors in designing their samples. Many states took advantage of this flexibility by varying target relative standard error across SICs in order to balance the cost and reliability of their estimates.

The above allocation resulted in a total initial sample size of 282,861 U.I. reporting units nationally.

Response

Of those sampled, 269,986 were eligible units (i.e., respondents, refusals, unusables, and nonrespondents). Usable responses were obtained from 205,203 units, producing a response rate of 76.0 percent based on units and 73.9 percent based on weighted employment.[4] See the table below for additional details.

Unit Type	**Unit Count**		**Weighted Empl. Count**	
Eligible	269,986		46,214,225	
Respondents		205,203		34,142,013
Nonrespondents		64,783		12,072,212
Out-of-scope and Out-of-business	12,875			
Initial sample size	282,861			

---

[3] Some states opted to further stratify their samples by substate areas.

[4] Subsequent to the closeout date for national estimates, additional data were collected by the states and used to prepare their respective estimates. Consequently, the response rates in most states were higher than the response rate used to develop national estimates.

Occupational Estimates

Weights were determined for sample units that had usable response. Each weight was composed of two factors, the reciprocal of the probability of selection and a nonresponse adjustment factor (NRAF).

For questionnaires that were not returned or were otherwise unusable, an NRAF was calculated to impute for the missing data. This factor was the ratio

$$\frac{\text{Weighted sample employment of all eligible units in sample}}{\text{Weighted sample employment of all usable eligible units}}$$

It was calculated for each state/three-digit SIC/size class sampling cell.

The sample employment used to calculate the NRAF was obtained from the sampling frame. If the NRAF in a cell was greater than a predetermined maximum factor (the latter increases as the number of respondents in a cell increases), the cell was collapsed with other homogeneous cells in the industry until the NRAF for the combined cell was not greater than the appropriate maximum factor. If the collapsing procedure terminated (i.e., no more cells were available for collapse) before satisfying the constraint above, then the most recent maximum factor was used. Note that homogeneous cells were adjacent size cells within a state and SIC. The final weight assigned to each usable unit in the sample was the product of the NRAF and the reciprocal of the probability of selection.

A separate ratio estimate of occupational employment was used to develop national estimates. The auxiliary variable used was the 1992 population value of total employment. This variable is also referred to as cell benchmark employment, denoted by M_{ij}. The term

$$\frac{M_{ij}}{\sum_k W_{ijk}\ E_{ijk}}$$

is known as the benchmark factor. It is the ratio of cell benchmark employment to cell weighted reported total employment. The estimation formula below produced final estimates (Pij) of occupational employment through benchmarking, that is, the process of multiplying the cell's weighted reported occupational employment ($\Sigma\ W_{ijk}\ P_{ijk}$) by its benchmark factor.

$$\hat{P}_{ij} = \left(\sum_k W_{ijk}\ P_{ijk}\right)\left(\frac{M_{ij}}{\Sigma\ W_{ijk}\ E_{ijk}}\right)$$

where $\hat{P}_{ij}$ = estimated employment for occupation P in industry i and size class j

i = a three-digit industry

j = size class

k = establishment

W_{ijk} = weight for establishment k in industry i and size class j after adjusting for nonresponse

P_{ijk} = reported employment for occupation P in establishment k within industry i and size class j

E_{ijk} = reported total employment for establishment k in industry i and size class j

M_{ij} = population value of total employment for industry i and size class j.

The estimated employment for an occupation at the three-digit industry i level was obtained by summing the occupational employment estimates P_{ij} across all size levels j within industry i.

$$\hat{P}_i = \sum_{j=1}^{L_i} \hat{P}_{ij}$$

where Li was the number of size levels j in industry i.

Similarly, the estimated employment for an occupation at the two-digit industry g level was obtained by summing the occupational employment estimates Pi across all three-digit industries i within two-digit industry g.

$$\hat{P}_g = \sum_{i=1}^{Lg} \hat{P}_i$$

where L_g was the number of three-digit industries i in industry g.

It is important to note, however, that because of publishability requirements, rounding adjustments were made such that occupational employment estimates at the three-digit industry level may not sum to the two-digit level estimates.

Variance Estimates

Estimates of sampling error were calculated on survey estimates to allow users to determine whether or not the occupational estimates were reliable enough for their needs. Only a probability sample can be used to estimate sampling error from a sample.

The formulas used to estimate the variance, a common measure of sampling error, were based on the sample design and on the method of estimation. In the OES survey, the formula used to estimate the variance of occupational employment was a subsample replication technique called the jackknife random group. The jackknife derives R estimates of total occupational employment from R subsamples of the parent sample by excluding one random group at a time. The jackknife then estimates the variance of the parent sample's employment estimator from the variability between the R employment estimates.

The variance for an occupational employment estimate at the three-digit industry i/size class j level is

$$S^2(\hat{P}_{ij}) = \frac{1}{(R)(R-1)} \sum_{r=1}^{R} (\hat{P}_{ijr} - \hat{P}_{ij})^2$$

Where

$S^2(\hat{P}_{ij})$ = estimated variance of $\hat{P}_{ij}$

R = number of random groups

$\hat{P}_{ij}$ = estimated employment for occupation P in industry i and size class j

$\hat{P}_{ijr}$ = estimated employment for occupation P in industry i, size class j, and and subsample r

$\hat{P}_{ij}$ = estimated mean employment for occupation P in industry i and size class j across R subsamples

The above formula for variance has been simplified. The actual formula includes corrections for finite populations.

The variance for an occupational employment estimate at the three-digit industry i level is obtained by summing the variances $S^2(\hat{P}_{ij})$ across all size levels j within industry i.

$$S^2(\hat{P}_i) = \sum_{j=1}^{L_i} S^2(\hat{P}_{ij})$$

where L_i is the number of size levels j in industry i.

Similarly, the variance for an occupational employment estimate at the two-digit industry g level is obtained by summing the variances $S^2(P_i)$ across all three-digit industries i within industry g.

$$S^2(\hat{P}_g) = \sum_{i=1}^{L_g} S^2(\hat{P}_i)$$

where L_g is the number of three-digit industries i in industry g.

Reliability of Estimates

Estimates developed from the sample may differ from the results of a complete census of all the establishments in the sampling frame. Two types of error, sampling and nonsampling, are possible in an estimate based on a sample survey. Sampling error occurs because observations are made only on a sample, not on the entire population. Nonsampling error can be attributed to many sources, e.g., an inability to obtain information about all cases in the sample, differences in the respondents' interpretation of questions, inability or unwillingness of respondents to provide correct information, errors made in recording, coding, or processing the data, errors made in estimating values for missing data, and failure to represent all units in the population.

Sampling error arises because the particular sample used in this survey is only one of a large number of possible samples of the same size that could have been selected with the same sample design. Estimates derived from those different samples would differ simply as a result of random effects. Relative standard standard errors that are a measure of that sampling error effect are presented in this publication. The relative standard errors of a survey estimate measure the variation among the estimates from all possible samples. The relative standard error is the standard error of the estimate divided by the employment estimate for that occupation. Thus, it shows the size of the standard error relative to the occupational estimate itself.

Use of the relative standard error enables the analyst to construct a confidence interval around the occupational estimate. The confidence interval includes the average value of the estimates obtained from all possible samples (of that size and design) at a confidence level specified by the analyst. If no nonsampling error is present (which is unlikely) the *a priori* interval will contain the true value with the confidence level specified.

To construct the confidence interval, divide the relative error shown in the table by 100 and multiply the result by the occupational estimate. The confidence interval is the occupational estimate, plus or minus the number resulting from the calculation described above. This estimate yields a confidence level of approximately 68 percent. That is, in 68 percent of the possible samples, the "true value" (neglecting nonsampling error) will be contained in the interval. Most analysts prefer to have a confidence level higher than 68 percent. If a 90 percent confidence level is desired, multiply the number produced from the calculation in the first sentence above by 1.6. For a 95% confidence level, multiply by 1.96. For almost full confidence (99 percent), multiply by 2.57.

For example, suppose the occupational employment estimate for chemist is 5,000 with an associated relative standard error shown on the table of three. The 68 percent confidence interval will then be (3/100) x 5,000 or the chemist estimate plus or minus 150. The "true value" will be contained in the interval of 4,850 to 5,150 about 68 percent of the time. For 95 percent confidence, multiply 150 times 1.6 = 240. The 95 percent confidence interval is 4,760 to 5,240. It is important to remember that nonsampling error can have important effects on the accuracy of the estimate. Unfortunately nonsampling errors can be very difficult to measure and are not available.

The relative standard errors primarily indicate the magnitude of the sampling error. They do not measure nonsampling error, including any biases in the data. Many edit and quality control procedures are used to reduce the nonsampling error caused by mistakes in recording, coding, and processing the data. The adjustments made for nonrespondents assumed that the characteristics of the nonrespondents are the same as those of the respondents at a given level. To the extent that this is not true, bias is introduced in the data. The magnitude of this bias is not known.

Particular care should be exercised in the interpretation of small estimates or small differences between estimates, because of relatively large sampling errors and the unknown magnitude of the biases.

Quality Control Measures

As described above, the OES Survey is a Federal-state cooperative effort in which states conduct their own surveys.

A major concern with a cooperative program like OES is accommodating state-specific publication needs with limited resources while standardizing survey procedures across all fifty states and the District of Columbia in order to produce quality estimates. The control on sources of nonsampling error in this decentralized environment can be particularly difficult. In addition, the review and validation function is spread across eight regional offices, thus leading to procedural differences between regions. Examples of quality control measures employed by BLS are the Survey Processing and Management System (SPAM) and the Estimates Delivery System (EDS), which were developed to provide a consistent and automated framework for state procedures and to reduce the workload at state, regional, and national levels.

By standardizing data processing activities (i.e., validating the sample frame, allocating and selecting the sample, refining mailing addresses, addressing envelopes and mailers, editing and updating questionnaires, producing management reports, and producing estimates) across all states, the use of SPAM and EDS has also standardized the survey methodology. This has significantly reduced the number of errors on the data files as well as the time needed to review them.

Other quality control measures used in the OES survey include

- followup solicitations of nonrespondents (especially essential nonrespondents),
- review of schedules to verify the accuracy and reasonableness of the reported data,
- adjustments of atypical data reporters,
- validation of the nonresponse adjustment factors,
- validation of the benchmark employment figures and of the benchmark factors, and
- validation of the analytical tables of estimates (at the two and three-digit SIC levels).

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Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in trade and regulated industries, by detailed industry of employment: 1994

(Filled jobs in thousands)

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Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Total trade and regulated	457.8	100.0	34.9	100.0	55.4	100.0	129.9	100.0	237.5	100.0
Transportation, communications, and utilities	243.8	53.3	20.8	59.7	29.6	53.5	73.8	56.8	119.6	50.3
Transportation	27.8	6.1	3.1	9.0	6.8	12.3	6.9	5.3	10.9	4.6
Railroad transportation	1.7	.4	.6	1.7	.4	.7	.5	.4	.2	.1
Local and interurban transit	.5	.1	.1	.2	.1	.2	.2	.2	.1	.1
Local and suburban transportation	.4	.1	<	.1	.1	.1	.2	.2	.1	<
Taxicabs	<	<	.0	.0	<	<	.0	.0	<	<
Bus charter service	<	<	.0	.0	.0	.0	.0	.0	<	<
School buses	<	<	<	<	<	<	.0	.0	<	<
Trucking and warehousing	4.8	1.0	.7	2.0	1.0	1.8	1.2	.9	1.9	.8
Trucking and courier services, excluding air	4.0	.9	.6	1.7	.8	1.5	1.0	.7	1.6	.7
Public warehousing and storage	.7	.2	.1	.3	.2	.3	.2	.2	.2	.1
Water transportation	2.3	.5	.2	.5	.3	.5	1.6	1.3	.2	.1
Deep sea foreign transportation of freight	.4	.1	.1	.2	.1	.2	.2	.2	.1	<
Deep sea domestic transportation of freight	.3	.1	<	.1	<	.1	.2	.1	<	<
Freight transportation on the Great Lakes	<	<	.0	.0	.0	.0	<	<	.0	.0
Water transportation of freight, n.e.c	.2	.1	<	.1	.1	.1	.2	.1	<	<
Water transportation of passengers	.1	<	<	<	<	.1	.1	.1	<	<
Water transportation services	1.2	.3	<	.1	<	.1	1.0	.8	.1	<
Air transportation	13.3	2.9	1.3	3.7	3.8	6.9	2.4	1.9	5.7	2.4
Air transportation, scheduled	11.9	2.6	1.0	3.0	3.8	6.8	2.0	1.5	5.2	2.2
Air transportation, nonscheduled	.3	.1	.1	.3	<	.1	.1	.1	.1	<
Airports, flying fields, and services	1.1	.2	.1	.4	.1	.1	.4	.3	.5	.2
Pipelines, except natural gas	2.2	.5	.1	.3	.3	.5	.6	.5	1.2	.5
Transportation services	3.0	.7	.2	.6	.9	1.7	.2	.2	1.6	.7
Passenger transportation arrangements	1.0	.2	<	.1	.2	.3	.0	.0	.8	.3
Freight transportation arrangements	1.6	.3	.1	.3	.6	1.1	.1	.1	.7	.3
Rental of railroad cars	.3	.1	.1	.2	.1	.2	.1	<	<	<
Misc. transportation services	.2	<	<	<	<	.1	.1	<	.1	<

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in trade and regulated industries, by detailed industry of employment: 1994

(Filled jobs in thousands)

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Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Communications	108.9	23.8	8.2	23.4	9.4	17.0	27.0	20.8	64.3	27.1
Telephone communications	56.6	12.4	4.6	13.3	7.3	13.2	20.0	15.4	24.6	10.4
Telegraph and other communications	1.4	.3	.2	.7	.2	.4	.6	.5	.3	.1
Radio and television broadcasting	33.8	7.4	1.5	4.3	1.0	1.7	2.1	1.6	29.2	12.3
Cable and other pay TV services	9.8	2.1	.8	2.2	.3	.5	.8	.6	7.9	3.3
Communications services, n.e.c.	7.4	1.6	1.0	3.0	.7	1.2	3.4	2.6	2.3	1.0
Utilities and sanitary services	107.1	23.4	9.5	27.3	13.4	24.2	39.9	30.7	44.3	18.7
Electric services	63.5	13.9	5.2	15.0	6.4	11.6	25.8	19.9	26.1	11.0
Gas production and distribution	10.6	2.3	1.3	3.8	1.7	3.1	2.7	2.1	4.9	2.1
Combination utility services	25.5	5.6	1.5	4.3	3.9	7.1	9.8	7.5	10.3	4.3
Water supply	1.1	.2	.2	.7	.2	.3	.2	.2	.5	.2
Sanitary services	6.3	1.4	1.2	3.4	1.2	2.2	1.4	1.1	2.5	1.1
Steam and air-conditioning supply	.1	<	<	.1	.0	.0	<	<	<	<
Irrigation systems	<	<	<	<	.0	.0	.0	.0	.0	.0
Wholesale and retail trade	213.9	46.7	14.1	40.3	25.8	46.5	56.1	43.2	117.9	49.7
Wholesale trade	184.1	40.2	11.5	32.9	18.4	33.1	50.5	38.8	103.8	43.7
Wholesale trade, durable goods	158.8	34.7	8.8	25.1	12.1	21.8	45.7	35.2	92.3	38.9
Motor vehicles, parts, and supplies	4.1	.9	.3	.9	.6	1.0	1.4	1.1	1.8	.8
Furniture and homefurnishings	.8	.2	.1	.3	.1	.2	.1	.1	.5	.2
Lumber and construction materials	1.6	.3	.1	.3	.1	.3	.4	.3	.9	.4
Professional and commercial equipment	74.5	16.3	4.2	12.1	8.2	14.7	17.7	13.6	44.4	18.7
Metals and minerals, except petroleum	2.0	.4	.2	.5	.2	.4	.7	.5	1.0	.4
Electrical goods	45.9	10.0	2.2	6.4	1.4	2.6	15.6	12.0	26.6	11.2
Hardware, plumbing, and heating equipment	4.7	1.0	.2	.6	.2	.3	1.6	1.3	2.7	1.1
Machinery, equipment, and supplies	22.2	4.8	1.1	3.0	.8	1.4	7.6	5.9	12.7	5.4
Miscellaneous durable goods	3.1	.7	.3	.9	.5	.9	.5	.4	1.8	.8
Wholesale trade, nondurable goods	25.3	5.5	2.7	7.8	6.3	11.4	4.8	3.7	11.5	4.8
Paper and paper products	1.7	.4	.1	.3	.4	.6	.3	.2	1.0	.4
Drugs, proprietaries, and sundries	4.2	.9	.7	1.9	1.1	1.9	.7	.5	1.7	.7

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in trade and regulated industries, by detailed industry of employment: 1994

(Filled jobs in thousands)

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Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Wholesale trade, nondurable goods—continued:										
Apparel, piece goods, and notions	1.8	0.4	0.2	0.7	0.5	1.0	0.2	0.2	0.8	0.3
Groceries and related products	5.3	1.2	.6	1.6	1.0	1.8	.8	.6	2.9	1.2
Farm-product raw materials	.4	.1	<	.1	.1	.2	<	<	.2	.1
Chemicals and allied products	5.1	1.1	.4	1.1	1.2	2.2	1.7	1.3	1.7	.7
Petroleum and petroleum products	2.2	.5	.2	.6	.6	1.0	.7	.5	.8	.3
Beer, wine, and distilled beverages	.7	.1	<	.1	.1	.3	.1	.1	.4	.2
Misc. nondurable goods	4.1	.9	.5	1.5	1.3	2.4	.3	.2	1.9	.8
Retail trade	29.8	6.5	2.6	7.4	7.4	13.4	5.7	4.4	14.2	6.0
Building materials and garden supplies	2.8	.6	.1	.4	.6	1.1	.2	.2	1.8	.8
Lumber and other building materials	2.2	.5	.1	.3	.4	.6	.2	.1	1.6	.7
Paint, glass, and wallpaper stores	.1	<	<	.1	<	.1	.0	.0	.1	<
Hardware stores	.3	.1	<	<	.2	.4	<	<	<	<
Retail nurseries and garden stores	.1	<	.0	.0	.0	.0	<	<	.1	.1
General merchandise stores	5.9	1.3	.9	2.7	1.9	3.4	1.4	1.1	1.8	.7
Department stores	5.4	1.2	.9	2.6	1.6	3.0	1.4	1.0	1.5	.6
Variety stores	.3	.1	<	.1	.1	.1	<	<	.2	.1
Misc. general merchandise stores	.2	.1	.0	.0	.2	.3	.0	.0	.1	<
Food stores	1.9	.4	.2	.5	.5	.9	.2	.1	1.0	.4
Grocery stores	1.9	.4	.2	.5	.5	.9	.1	.1	1.0	.4
Fruit and vegetable markets	<	<	.0	.0	.0	.0	<	<	.0	.0
Miscellaneous food stores	<	<	.0	.0	.0	.0	.0	.0	<	<
Automotive dealers and service stations	.9	.2	.1	.2	.3	.6	.1	.1	.4	.1
New and used car dealers	.1	<	<	<	.0	.0	.0	.0	<	<
Auto and home supply stores	.3	.1	<	<	.1	.1	.1	.1	.2	.1
Gasoline service stations	.5	.1	<	.1	.2	.4	<	<	.1	.1
Automotive dealers, n.e.c.	<	<	.0	.0	.0	.0	.0	.0	<	<
Apparel and accessory stores	2.6	.6	.1	.3	.7	1.2	.9	.7	.9	.4
Men's and boys' clothing stores	.1	<	<	.1	<	<	.0	.0	<	<
Women's clothing stores	1.2	.3	<	.1	.1	.2	.8	.6	.3	.1

See explanatory information and SOURCE at end of table.

Table A-1. Scientific, engineering, and technical (SET) personnel and SET managers in trade and regulated industries, by detailed industry of employment: 1994

(Filled jobs in thousands)

Page 4 of 4

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Apparel and accessory stores—continued:										
Women's accessory and specialty stores	0.1	<	0.0	0.0	0.1	0.1	0.0	0.0	<	<
Children's and infants' wear stores	<	<	.0	.0	<	.1	.0	.0	<	<
Family clothing stores	.6	.1	<	.1	.2	.4	<	<	.3	.1
Shoe stores	.3	.1	<	.1	.1	.2	<	<	.2	.1
Misc. apparel and accessory stores	.2	<	<	.1	.1	.2	<	<	<	<
Furniture and homefurnishings stores	8.3	1.8	.4	1.2	1.4	2.6	1.4	1.1	5.0	2.1
Furniture and homefurnishings stores	.8	.2	.1	.2	.2	.3	.0	.0	.6	.2
Household appliance stores	.1	<	.0	.0	.1	.1	.0	.0	.1	<
Radio, television, and computer stores	7.4	1.6	.4	1.0	1.2	2.1	1.4	1.1	4.4	1.8
Eating and drinking places	.4	.1	<	.1	.2	.3	<	<	.2	.1
Misc. retail stores	7.1	1.6	.7	2.0	1.8	3.3	1.5	1.1	3.1	1.3
Drug stores and proprietary stores	.7	.1	.1	.2	.3	.6	<	<	.2	.1
Liquor stores	.1	<	.0	.0	.0	.0	.1	.1	.0	.0
Used merchandise stores	<	<	.0	.0	<	<	.0	.0	.0	.0
Miscellaneous shopping goods stores	1.7	.4	.2	.5	.4	.7	.5	.4	.6	.3
Nonstore retailers	4.1	.9	.4	1.1	1.0	1.8	.8	.6	1.9	.8
Fuel dealers	.1	<	<	<	<	<	.1	<	<	<
Retail stores, n.e.c.	.5	.1	<	.1	.1	.2	<	<	.3	.1

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50 for numbers and less than 0.05 for percents.
0 = Data were collected and the reported number or value was zero.
n.e.c. = Not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-2. Scientists in trade and regulated industries, by broad industry group of employment and detailed occupation: 1994

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Physical	Mathe-matical	Life	Social	Computer
Total trade and regulated	55.1	5.4	1.5	2.6	0.8	44.8
Transportation, communications, and public utilities	29.6	3.0	1.5	1.2	.8	23.0
Transportation	6.8	.2	1.1	<	.0	5.5
Railroad transportation	.4	.0	.1	.0	.0	.3
Local and interurban transit	.1	.0	.0	<	.0	.1
Trucking and warehousing	1.0	<	.0	.0	.0	1.0
Water transportation	.2	.0	.0	.0	.0	.2
Transportation by air	3.8	.1	1.0	.0	.0	2.8
Pipelines, except natural gas	.3	<	.0	.0	.0	.2
Transportation services	.9	<	.0	.0	.0	.9
Communications	9.4	<	.0	<	.5	8.8
Utilities and sanitary services	13.4	2.8	.4	1.2	.4	8.7
Wholesale and retail trade	25.5	2.4	.0	1.4	.0	21.7
Wholesale trade	18.4	2.4	.0	1.3	.0	14.7
Wholesale trade, durable goods	12.1	.6	.0	.3	.0	11.2
Wholesale trade, nondurable goods	6.3	1.8	.0	1.0	.0	3.5
Retail trade	7.1	<	.0	.1	.0	7.0
Building materials and garden supplies	.4	<	.0	.0	.0	.4
General merchandise stores	1.9	.0	.0	.0	.0	1.9
Food stores	.6	.0	.0	.0	.0	.6
Automotive dealers and service stations	.3	<	.0	.0	.0	.3
Apparel and accessory stores	.5	.0	.0	.0	.0	.5
Furniture and homefurnishings stores	1.4	.0	.0	<	.0	1.4
Eating and drinking places	.2	.0	.0	.0	.0	.2
Misc. retail stores	1.8	<	.0	<	.0	1.8

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-3. Engineers in trade and regulated industries, by broad industry group of employment and detailed occupation: 1994

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Aero-nau-tical	Civil	Elec-trical/ elec-tronics	Compu-ter	Mecha-nical	Indus-trial	Sales	Other
Total trade and regulated	130.3	0.5	4.9	47.6	3.7	11.0	4.2	20.0	38.4
Transportation, communications, and public utilities	73.8	.5	[illegible]	35.2	3.7	4.2	4.2	.0	21.1
Transportation	6.9	.5	[illegible]	.4	.4	.2	.6	.0	4.4
Railroad transportation	.5	.0	[illegible]	.0	.0	.0	.0	.0	.3
Local and interurban transit	.2	.0	.0	.0	.0	.0	.0	.0	.2
Trucking and warehousing	1.2	.0	.0	.0	.0	.0	.0	.0	1.2
Water transportation	1.6	.0	.0	.0	.0	.1	.0	.0	1.5
Transportation by air	2.4	.5	.0	.4	.4	.0	.6	.0	.6
Pipelines, except natural gas	.6	.0	.1	.1	.0	.1	.0	.0	.3
Transportation services	.2	.0	.0	.0	.0	.0	.0	.0	.2
Communications	27.0	.0	1.0	17.7	2.7	.4	.9	.0	4.4
Utilities and sanitary services	39.9	.0	3.6	17.0	.7	3.6	2.7	.0	12.3
Wholesale and retail trade	56.5	.0	.0	12.4	.0	6.8	.0	20.0	17.3
Wholesale trade	50.5	.0	.0	12.0	.0	6.2	.0	16.5	15.8
Wholesale trade, durable goods	45.7	.0	.0	11.7	.0	5.4	.0	14.3	14.3
Wholesale trade, nondurable goods	4.8	.0	.0	.4	.0	.8	.0	2.2	1.4
Retail trade	6.0	.0	.0	.4	.0	.6	.0	3.4	1.6
Building materials and garden supplies	.2	.0	.0	.0	.0	<	.0	.2	<
General merchandise stores	1.4	.0	.0	.1	.0	.4	.0	.8	.1
Food stores	.2	.0	.0	<	.0	<	.0	.1	.1
Automotive dealers and service stations	.2	.0	.0	.0	.0	<	.0	.1	<
Apparel and accessory stores	.9	.0	.0	.0	.0	<	.0	.8	<
Furniture and homefurnishings stores	1.5	.0	.0	.2	.0	<	.0	.2	1.0
Eating and drinking places	<	.0	.0	.0	.0	.0	.0	.0	<
Misc. retail stores	1.6	.0	.0	.0	.0	<	.0	1.3	.3

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-4. Technicians in trade and regulated industries, by broad industry group of employment and detailed occupation: 1994

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Computer programmer	Drafter	Scientist	Engineering				
					Total	Electrical/ electronics	Mechanical	Civil	Other
Total trade and regulated	238.0	52.3	22.1	7.1	156.5	84.4	5.0	3.4	63.8
Transportation, communications, and public utilities	119.6	19.7	15.4	3.5	81.0	19.6	2.5	3.4	55.4
Transportation	10.9	6.9	.2	.5	3.4	1.0	.2	.1	2.1
Railroad transportation	.2	.2	.0	.0	.0	.0	.0	.0	.0
Local and interurban transit	.1	.1	.0	.0	.0	.0	.0	.0	.0
Trucking and warehousing	1.9	1.8	.0	<	.0	.0	.0	.0	.0
Water transportation	.2	.2	.0	<	.0	.0	.0	.0	.0
Transportation by air	5.8	3.0	.0	.1	2.7	.8	.0	.0	1.9
Pipelines, except natural gas	1.2	.1	.2	.3	.7	.2	.2	.1	.2
Transportation services	1.6	1.6	.0	.1	.0	.0	.0	.0	.0
Communications	64.3	8.8	5.0	<	50.5	11.2	.1	2.2	37.0
Utilities and sanitary services	44.3	4.0	10.2	3.0	27.1	7.4	2.2	1.2	16.3
Wholesale and retail trade	118.5	32.6	6.7	3.6	75.5	64.8	2.4	.0	8.3
Wholesale trade	103.7	22.6	4.5	3.5	73.1	63.6	2.3	.0	7.2
Wholesale trade, durable goods	92.3	17.2	4.0	1.0	70.0	61.6	1.9	.0	6.5
Wholesale trade, nondurable goods	11.5	5.4	.6	2.4	3.1	1.9	.4	.0	.8
Retail trade	14.7	9.9	2.2	.2	2.4	1.2	.2	.0	1.0
Building materials and garden supplies	1.9	.5	1.3	<	.1	.0	.0	.0	.1
General merchandise stores	1.8	1.2	.3	.0	.3	.1	<	.0	.1
Food stores	1.1	.9	.1	<	.1	<	.0	.0	<
Automotive dealers and service stations	.4	.3	.1	<	<	<	.0	.0	<
Apparel and accessory stores	1.0	.9	<	.0	.1	.0	.0	.0	.1
Furniture and homefurnishings stores	5.0	3.7	.2	.0	1.1	.8	.0	.0	.3
Eating and drinking places	.2	.2	.0	<	.0	.0	.0	.0	.0
Misc. retail stores	3.3	2.4	.2	.1	.7	.2	.2	.0	.4

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Page 1 of 27

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Railroads (SIC 4010)			
Scientific and technical personnel	1,700	0.7	(nc)
Scientists	390	.2	(nc)
Operations and systems researchers and analysts	60	<	0
Computer analysts	330	.1	0
Managers of scientific and technical personnel	590	.2	0
Engineers	540	.2	(nc)
Civil	200	.1	0
Other, n.e.c	340	.1	0
Technicians	180	.1	0
Computer programmers	180	.1	0
Local and suburban transportation (SIC 4110)			
Scientific and technical personnel	450	.3	(nc)
Scientists	70	<	(nc)
Life scientists	20	<	0
Computer analysts	50	<	6
Managers of scientific and technical personnel	50	<	0
Engineers	240	.1	(nc)
Technicians	90	<	4
Computer programmers	90	<	4
Taxicabs (SIC 4120)			
Scientific and technical personnel	20	<	(nc)
Scientists	10	<	42
Computer analysts	10	<	42
Technicians	10	<	0
Computer programmers	10	<	0
Bus charter service (SIC 4140)			
Scientific and technical personnel	10	<	0
Technicians	10	<	0
Computer programmers	10	<	0
School buses (SIC 4150)			
Scientific and technical personnel	30	<	(nc)
Scientists	10	.0	(nc)
Computer analysts	10	.0	(nc)
Managers of scientific and technical personnel	10	<	17
Technicians	10	<	12

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
School buses (SIC 4150)—continued:			
Computer programmers	10	<	12
Trucking and courier services, excluding air (SIC 4210)			
Scientific and technical personnel	4,050	.2	(nc)
Scientists	850	<	(nc)
Physical scientists	10	.0	42
Computer analysts	840	<	6
Managers of scientific and technical personnel	590	<	6
Engineers	970	.1	4
Technicians	1,640	.1	(nc)
Computer programmers	1,620	.1	9
Physical and life science technicians	20	.0	24
Public warehousing and storage (SIC 4220)			
Scientific and technical personnel	700	.5	(nc)
Scientists	150	.1	(nc)
Physical scientists	20	<	70
Computer analysts	130	.1	4
Managers of scientific and technical personnel	100	.1	4
Engineers	210	.2	15
Technicians	240	.2	(nc)
Computer programmers	220	.2	10
Physical and life science technicians	20	<	39
Deep sea foreign transportation of freight (SIC 4410)			
Scientific and technical personnel	430	2.5	(nc)
Scientists	100	.6	0
Computer analysts	100	.6	0
Managers of scientific and technical personnel	70	.4	2
Engineers	200	1.2	(nc)
Marine	140	.8	0
Mechanical	30	.2	0
Other, n.e.c	30	.2	0
Technicians	60	.3	(nc)
Computer programmers	50	.3	0
Physical and life science technicians	10	.1	0
Deep sea domestic transportation of freight (SIC 4420)			
Scientific and technical personnel	290	2.5	(nc)
Scientists	50	.4	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Page 3 of 27

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Deep sea domestic transportation of freight (SIC 4420)—continued:			
Computer analysts	50	0.4	(nc)
Managers of scientific and technical personnel	40	.4	0
Engineers	170	1.5	(nc)
Marine	120	1.1	0
Mechanical	20	.2	0
Other, n.e.c	30	.2	0
Technicians	30	.3	0
Computer programmers	30	.3	0
Freight transportation on the Great Lakes (SIC 4430)			
Scientific and technical personnel	10	.5	(nc)
Engineers	10	.5	(nc)
Marine	10	.5	0
Water transportation of freight, n.e.c. (SIC 4440)			
Scientific and technical personnel	240	1.8	(nc)
Scientists	60	.4	(nc)
Computer analysts	60	.4	(nc)
Managers of scientific and technical personnel	20	.2	0
Engineers	150	1.1	(nc)
Marine	90	.7	0
Mechanical	40	.3	0
Other, n.e.c	20	.2	23
Technicians	10	.1	0
Computer programmers	10	.1	0
Water transportation of passengers (SIC 4480)			
Scientific and technical personnel	140	.8	(nc)
Scientists	30	.2	(nc)
Computer analysts	30	.2	(nc)
Managers of scientific and technical personnel	10	.1	0
Engineers	80	.4	(nc)
Marine	60	.3	0
Mechanical	20	.1	0
Technicians	20	.1	0
Computer programmers	20	.1	0
Water transportation services (SIC 4490)			
Scientific and technical personnel	1,190	1.0	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Water transportation services (SIC 4490)—continued:			
Scientists	50	<	10
Computer analysts	50	<	10
Managers of scientific and technical personnel	40	<	7
Engineers	1,030	.9	(nc)
Marine	990	.8	26
Mechanical	20	<	0
Other, n.e.c	20	<	0
Technicians	70	.1	(nc)
Computer programmers	60	.1	9
Physical and life science technicians	10	<	0
Air transportation, scheduled (SIC 4510)			
Scientific and technical personnel	11,930	1.9	(nc)
Scientists	3,750	.6	(nc)
Operations and systems researchers and analysts	990	.2	<
Physical scientists	80	<	0
Computer analysts	2,680	.4	1
Managers of scientific and technical personnel	1,050	.2	2
Engineers	1,960	.3	(nc)
Aeronautical	320	<	0
Computer	370	.1	2
Electrical/electronics	280	<	1
Industrial	480	.1	3
Other, n.e.c	510	.1	6
Technicians	5,170	.8	(nc)
Computer programmers	2,830	.5	<
Electrical/electronics engineering technicians	700	.1	0
All other engineering technicians	1,610	.3	<
Physical and life science technicians	30	<	57
Air transportation, nonscheduled (SIC 4520)			
Scientific and technical personnel	270	.7	(nc)
Scientists	40	.1	(nc)
Computer analysts	40	.1	(nc)
Managers of scientific and technical personnel	90	.2	0
Engineers	70	.2	(nc)
Aeronautical	40	.1	0
Other, n.e.c	30	.1	(nc)
Technicians	70	.2	5
Computer programmers	70	.2	5

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Airports, flying fields, and services (SIC 4580)			
Scientific and technical personnel	1,080	1.0	(nc)
Scientists	60	.1	(nc)
Operations and systems researchers and analysts	20	<	0
Computer analysts	40	<	0
Managers of scientific and technical personnel	140	.1	3
Engineers	390	.4	(nc)
Aeronautical	180	.2	17
Computer	20	<	46
Electrical/electronics	70	.1	3
Industrial	70	.1	5
Other, n.e.c	50	<	2
Technicians	490	.5	(nc)
Computer programmers	60	<	3
Electrical/electronics engineering technicians	120	.1	1
All other engineering technicians	280	.3	16
Physical and life science technicians	30	<	24
Passenger transportation arrangements (SIC 4720)			
Scientific and technical personnel	1,000	.5	(nc)
Scientists	170	.1	2
Computer analysts	170	.1	2
Managers of scientific and technical personnel	30	<	0
Technicians	800	.4	<
Computer programmers	800	.4	<
Freight transportation arrangements (SIC 4730)			
Scientific and technical personnel	1,560	1.0	(nc)
Scientists	610	.4	1
Computer analysts	610	.4	1
Managers of scientific and technical personnel	120	.1	3
Engineers	90	.1	30
Technicians	740	.5	18
Computer programmers	740	.5	18
Rental of railroad cars (SIC 4740)			
Scientific and technical personnel	260	11.2	(nc)
Scientists	120	4.9	(nc)
Physical scientists	10	.3	0
Computer analysts	110	4.7	(nc)
Managers of scientific and technical personnel	60	2.8	0

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Rental of railroad cars (SIC 4740)—continued:			
Engineers	60	2.5	0
Technicians	20	1.0	19
Computer programmers	20	1.0	19
Misc. transportation services (SIC 4780)			
Scientific and technical personnel	190	.6	(nc)
Scientists	30	.1	(nc)
Physical scientists	10	<	0
Computer analysts	20	.1	0
Managers of scientific and technical personnel	10	<	0
Engineers	60	.2	0
Technicians	90	.2	(nc)
Computer programmers	30	.1	12
Physical and life science technicians	60	.2	30
Telephone communications (SIC 4810)			
Scientific and technical personnel	56,580	6.4	(nc)
Scientists	7,290	.8	(nc)
Life scientists	50	<	83
Social scientists	150	<	4
Computer analysts	7,090	.8	12
Managers of scientific and technical personnel	4,630	.5	13
Engineers	20,010	2.3	(nc)
Civil	920	.1	14
Computer	1,670	.2	12
Electrical/electronics	12,720	1.4	12
Industrial	760	.1	21
Mechanical	190	<	11
Other, n.e.c	3,750	.4	6
Technicians	24,650	2.8	(nc)
Computer programmers	7,810	.9	4
Drafters	4,430	.5	10
Electrical/electronics engineering technicians	7,760	.9	10
Mechanical engineering technicians	20	.0	5
Civil engineering technicians	2,000	.2	43
All other engineering technicians	2,620	.3	(nc)
Physical and life science technicians	10	.0	60
Telegraph and other communications (SIC 4820)			
Scientific and technical personnel	1,400	18.7	(nc)
Scientists	220	2.9	(nc)
Computer analysts	220	2.9	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Telegraph and other communications (SIC 4820)—continued:			
Managers of scientific and technical personnel	240	3.2	12
Engineers	630	8.4	(nc)
Computer	340	4.5	37
Electrical/electronics	280	3.8	2
Other, n.e.c	10	.2	(nc)
Technicians	310	4.1	(nc)
Computer programmers	100	1.3	2
Electrical/electronics engineering technicians	140	1.9	16
All other engineering technicians	70	.9	(nc)
Radio and television broadcasting (SIC 4830)			
Scientific and technical personnel	33,790	14.4	(nc)
Scientists	950	.4	(nc)
Physical scientists	20	<	0
Social scientists	230	.1	13
Computer analysts	700	.3	2
Managers of scientific and technical personnel	1,490	.6	6
Engineers	2,120	.9	(nc)
Civil	10	.0	0
Computer	210	.1	21
Electrical/electronics	1,480	.6	3
Industrial	100	<	23
Mechanical	50	<	13
Other, n.e.c	270	.1	17
Technicians	29,230	12.5	(nc)
Computer programmers	110	<	6
Electrical/electronics engineering technicians	1,350	.6	7
Mechanical engineering technicians	70	<	3
Civil engineering technicians	30	<	16
All other engineering technicians	27,660	11.8	(nc)
Physical and life science technicians	10	.0	0
Cable and other pay TV services (SIC 4840)			
Scientific and technical personnel	9,760	6.8	(nc)
Scientists	280	.2	(nc)
Social scientists	90	.1	3
Computer analysts	190	.1	15
Managers of scientific and technical personnel	760	.5	5
Engineers	840	.6	(nc)
Civil	30	<	34
Computer	150	.1	5
Electrical/electronics	480	.3	8

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Cable and other pay TV services (SIC 4840)—continued:			
Industrial	30	<	10
Mechanical	40	<	0
Other, n.e.c	110	.1	13
Technicians	7,880	5.5	(nc)
Computer programmers	250	.2	16
Drafters	450	.3	4
Electrical/electronics engineering technicians	1,250	.9	6
Mechanical engineering technicians	20	<	0
Civil engineering technicians	90	.1	50
All other engineering technicians	5,820	4.1	(nc)
Communications services, n.e.c. (SIC 4890)			
Scientific and technical personnel	7,410	41.9	(nc)
Scientists	670	3.8	(nc)
Physical scientists	20	.1	25
Computer analysts	650	3.7	0
Managers of scientific and technical personnel	1,040	5.9	9
Engineers	3,440	19.5	(nc)
Civil	20	.1	0
Computer	310	1.8	12
Electrical/electronics	2,710	15.3	1
Industrial	30	.2	7
Mechanical	60	.3	20
Other, n.e.c	310	1.8	4
Technicians	2,260	12.8	(nc)
Computer programmers	510	2.9	<
Drafters	130	.7	2
Electrical/electronics engineering technicians	710	4.0	2
Civil engineering technicians	30	.2	3
All other engineering technicians	880	4.9	(nc)
Electric services (SIC 4910)			
Scientific and technical personnel	63,520	15.2	(nc)
Scientists	6,440	1.6	(nc)
All other mathematicians	240	.1	6
Geologists, geophysicists, and earth scientists	40	<	0
All other physical scientists	1,160	.3	11
Life scientists	890	.2	2
Social scientists	210	<	9
Computer analysts	3,900	.9	1
Managers of scientific and technical personnel	5,220	1.2	2
Engineers	25,800	6.2	(nc)
Chemical	500	.1	2
Civil	1,530	.4	3
Computer	490	.1	2

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Electric services (SIC 4910)—continued:			
Electrical/electronics	12,690	3.0	1
Industrial	1,640	.4	2
Mechanical	2,040	.5	1
Safety	1,120	.3	1
Nuclear	2,910	.7	0
Other, n.e.c	2,880	.7	2
Technicians	26,060	6.2	(nc)
Computer programmers	1,790	.4	2
Drafters	5,960	1.4	(nc)
Surveyors	1,520	.4	(nc)
Electrical/electronics engineering technicians	5,720	1.4	1
Mechanical engineering technicians	1,560	.4	6
Civil engineering technicians	490	.1	4
All other engineering technicians	7,140	1.7	1
Physical and life science technicians	1,880	.4	1
Gas production and distribution (SIC 4920)			
Scientific and technical personnel	10,630	6.7	(nc)
Scientists	1,700	1.1	(nc)
All other mathematicians	140	.1	0
Geologists, geophysicists, and earth scientists	70	<	41
All other physical scientists	180	.1	15
Life scientists	20	<	0
Social scientists	60	<	0
Computer analysts	1,230	.8	3
Managers of scientific and technical personnel	1,340	.8	4
Engineers	2,670	1.7	(nc)
Chemical	40	<	0
Civil	610	.4	11
Computer	40	<	0
Electrical/electronics	270	.2	4
Industrial	270	.2	2
Mechanical	470	.3	15
Safety	120	.1	6
Other, n.e.c	850	.5	4
Technicians	4,920	3.1	(nc)
Computer programmers	840	.5	4
Drafters	1,120	.7	(nc)
Surveyors	510	.3	(nc)
Electrical/electronics engineering technicians	370	.2	5
Mechanical engineering technicians	270	.2	11
Civil engineering technicians	420	.3	3
All other engineering technicians	1,250	.8	5
Physical and life science technicians	140	.1	13
Combination utility services (SIC 4930)			
Scientific and technical personnel	25,150	13.8	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Combination utility services (SIC 4930)—continued:			
Scientists	3,600	2.0	(nc)
All other mathematicians	50	<	0
Life scientists	110	.1	6
Social scientists	80	<	0
Computer analysts	3,360	1.8	<
Managers of scientific and technical personnel	1,500	.8	2
Engineers	9,780	5.4	(nc)
Chemical	110	.1	11
Civil	1,030	.6	1
Computer	90	<	2
Electrical/electronics	4,000	2.2	1
Industrial	640	.4	2
Mechanical	940	.5	1
Safety	160	.1	0
Nuclear	320	.2	0
Other, n.e.c	2,490	1.4	1
Technicians	10,270	5.6	(nc)
Computer programmers	1,240	.7	<
Drafters	2,670	1.5	(nc)
Surveyors	790	.4	(nc)
Electrical/electronics engineering technicians	1,250	.7	3
Mechanical engineering technicians	330	.2	<
Civil engineering technicians	100	<	4
All other engineering technicians	3,700	2.0	1
Physical and life science technicians	190	.1	5
Water supply (SIC 4940)			
Scientific and technical personnel	1,110	4.1	(nc)
Scientists	150	.5	(nc)
Geologists, geophysicists, and earth scientists	30	.1	10
All other physical scientists	60	.2	6
Life scientists	20	.1	0
Computer analysts	40	.1	3
Managers of scientific and technical personnel	230	.9	11
Engineers	200	.7	(nc)
Civil	120	.4	6
Computer	10	<	17
Industrial	10	<	0
Mechanical	20	.1	0
Safety	10	<	11
Other, n.e.c	30	.1	(nc)
Technicians	530	2.0	(nc)
Computer programmers	50	.2	6
Drafters	200	.8	(nc)
Surveyors	20	.1	0

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Water supply (SIC 4940)—continued:			
Electrical/electronics engineering technicians	20	0.1	0
Civil engineering technicians	40	.1	5
All other engineering technicians	100	.4	(nc)
Physical and life science technicians	100	.4	36
Sanitary services (SIC 4950)			
Scientific and technical personnel	6,290	4.4	(nc)
Scientists	1,200	.8	(nc)
Geologists, geophysicists, and earth scientists	240	.2	11
All other physical scientists	640	.4	15
Life scientists	140	.1	13
Social scientists	10	<	0
Computer analysts	170	.1	2
Managers of scientific and technical personnel	1,180	.8	10
Engineers	1,380	1.0	(nc)
Chemical	90	.1	7
Civil	290	.2	6
Computer	40	<	3
Electrical/electronics	70	<	0
Industrial	120	.1	3
Mechanical	150	.1	3
Safety	250	.2	3
Other, n.e.c	370	.3	(nc)
Technicians	2,530	1.8	(nc)
Computer programmers	90	.1	3
Drafters	240	.2	(nc)
Surveyors	130	.1	(nc)
Electrical/electronics engineering technicians	50	<	2
Civil engineering technicians	140	.1	4
All other engineering technicians	1,190	.8	(nc)
Physical and life science technicians	690	.5	6
Steam and air-conditioning supply (SIC 4960)			
Scientific and technical personnel	90	4.4	(nc)
Managers of scientific and technical personnel	40	2.2	3
Engineers	30	1.4	(nc)
Mechanical	10	.5	0
Other, n.e.c	20	1.0	(nc)
Technicians	20	.8	(nc)
Drafters	10	.4	14
All other engineering technicians	10	.4	(nc)
Irrigation systems (SIC 4970)			
Scientific and technical personnel	10	.4	0
Managers of scientific and technical personnel	10	.4	0

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Motor vehicles, parts, and supplies (SIC 5010)			
Scientific and technical personnel	4,100	0.9	(nc)
Scientists	580	.1	(nc)
Physical scientists	10	.0	0
Computer analysts	570	.1	4
Managers of scientific and technical personnel	300	.1	7
Engineers	1,420	.3	(nc)
Electrical/electronics	180	<	21
Mechanical	210	<	18
Sales	230	<	9
Other, n.e.c	800	.2	13
Technicians	1,800	.4	(nc)
Computer programmers	450	.1	4
Drafters	150	<	12
Electrical/electronics engineering technicians	760	.2	18
Mechanical engineering technicians	120	<	7
All other engineering technicians	310	.1	15
Physical and life science technicians	10	.0	95
Furniture and homefurnishings (SIC 5020)			
Scientific and technical personnel	760	.5	(nc)
Scientists	110	.1	5
Computer analysts	110	.1	5
Managers of scientific and technical personnel	90	.1	6
Engineers	80	<	(nc)
Mechanical	10	<	0
Other, n.e.c	70	<	(nc)
Technicians	480	.3	(nc)
Computer programmers	190	.1	4
Drafters	120	.1	9
Electrical/electronics engineering technicians	150	.1	38
All other engineering technicians	20	<	(nc)
Lumber and construction materials (SIC 5030)			
Scientific and technical personnel	1,550	.7	(nc)
Scientists	140	.1	(nc)
Physical scientists	30	<	20
Computer analysts	110	<	6
Managers of scientific and technical personnel	100	<	4
Engineers	450	.2	(nc)
Electrical/electronics	40	<	18
Mechanical	60	<	11
Sales	190	.1	20

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Lumber and construction materials (SIC 5030)—continued:			
Other, n.e.c	160	0.1	8
Technicians	860	.4	(nc)
Computer programmers	110	<	2
Drafters	480	.2	11
Electrical/electronics engineering technicians	80	<	22
Mechanical engineering technicians	40	<	42
All other engineering technicians	130	.1	9
Physical and life science technicians	20	<	19
Professional and commercial equipment (SIC 5040)			
Scientific and technical personnel	74,500	9.6	(nc)
Scientists	8,150	1.0	(nc)
Physical scientists	280	<	18
Life scientists	270	<	10
Computer analysts	7,600	1.0	7
Managers of scientific and technical personnel	4,240	.6	8
Engineers	17,710	2.3	(nc)
Electrical/electronics	4,030	.5	10
Mechanical	1,320	.2	20
Sales	4,860	.6	8
Other, n.e.c	7,500	1.0	6
Technicians	44,400	5.7	(nc)
Computer programmers	12,440	1.6	5
Drafters	760	.1	18
Electrical/electronics engineering technicians	26,670	3.4	4
Mechanical engineering technicians	570	.1	19
All other engineering technicians	3,160	.4	14
Physical and life science technicians	800	.1	13
Metals and minerals, except petroleum (SIC 5050)			
Scientific and technical personnel	2,050	1.5	(nc)
Scientists	220	.2	(nc)
Physical scientists	40	<	23
Life scientists	40	<	0
Computer analysts	140	.1	5
Managers of scientific and technical personnel	190	.1	11
Engineers	680	.5	(nc)
Electrical/electronics	50	<	16
Mechanical	120	.1	8
Sales	190	.1	7
Other, n.e.c	320	.2	28
Technicians	960	.7	(nc)
Computer programmers	230	.2	3

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Metals and minerals, except petroleum (SIC 5050)—continued:			
Drafters	400	0.3	8
Electrical/electronics engineering technicians	200	.2	22
Mechanical engineering technicians	60	<	17
All other engineering technicians	50	<	14
Physical and life science technicians	20	<	58
Electrical goods (SIC 5060)			
Scientific and technical personnel	45,880	9.7	(nc)
Scientists	1,450	.3	(nc)
Physical scientists	40	<	0
Computer analysts	1,410	.3	7
Managers of scientific and technical personnel	2,240	.5	7
Engineers	15,570	3.3	(nc)
Electrical/electronics	5,910	1.2	9
Mechanical	930	.2	18
Sales	5,150	1.1	5
Other, n.e.c	3,580	.8	14
Technicians	26,620	5.6	(nc)
Computer programmers	1,920	.4	9
Drafters	650	.1	11
Electrical/electronics engineering technicians	22,100	4.7	6
Mechanical engineering technicians	240	<	23
All other engineering technicians	1,690	.4	16
Physical and life science technicians	20	.0	0
Hardware, plumbing, and heating equipment (SIC 5070)			
Scientific and technical personnel	4,680	1.6	(nc)
Scientists	180	.1	(nc)
Physical scientists	10	.0	18
Computer analysts	170	.1	4
Managers of scientific and technical personnel	210	.1	11
Engineers	1,630	.6	(nc)
Electrical/electronics	170	.1	11
Mechanical	530	.2	13
Sales	750	.3	7
Other, n.e.c	180	.1	14
Technicians	2,660	.9	(nc)
Computer programmers	350	.1	4
Drafters	240	.1	5
Electrical/electronics engineering technicians	1,780	.6	14
Mechanical engineering technicians	180	.1	31
All other engineering technicians	100	<	14
Physical and life science technicians	10	.0	76

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Machinery, equipment, and supplies (SIC 5080)			
Scientific and technical personnel	22,150	2.9	(nc)
Scientists	760	.1	(nc)
Physical scientists	60	<	29
Life scientists	10	.0	53
Computer analysts	690	.1	4
Managers of scientific and technical personnel	1,060	.1	7
Engineers	7,620	1.0	(nc)
Electrical/electronics	1,190	.2	11
Mechanical	2,080	.3	11
Sales	2,810	.4	10
Other, n.e.c	1,540	.2	17
Technicians	12,710	1.7	(nc)
Computer programmers	920	.1	9
Drafters	1,060	.1	8
Electrical/electronics engineering technicians	9,090	1.2	9
Mechanical engineering technicians	670	.1	17
All other engineering technicians	890	.1	15
Physical and life science technicians	80	<	28
Miscellaneous durable goods (SIC 5090)			
Scientific and technical personnel	3,120	1.0	(nc)
Scientists	480	.2	(nc)
Physical scientists	90	<	26
Life scientists	20	<	21
Computer analysts	370	.1	5
Managers of scientific and technical personnel	330	.1	5
Engineers	520	.2	(nc)
Electrical/electronics	90	<	11
Mechanical	160	<	27
Sales	90	<	14
Other, n.e.c	180	.1	5
Technicians	1,790	.6	(nc)
Computer programmers	620	.2	4
Drafters	120	<	22
Electrical/electronics engineering technicians	800	.3	10
Mechanical engineering technicians	40	<	5
All other engineering technicians	130	<	38
Physical and life science technicians	80	<	12
Paper and paper products (SIC 5110)			
Scientific and technical personnel	1,670	.7	(nc)
Scientists	360	.2	(nc)
Physical scientists	10	<	53
Computer analysts	350	.1	4

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Paper and paper products (SIC 5110)—continued:			
Managers of scientific and technical personnel	100	<	6
Engineers	260	.1	(nc)
Electrical/electronics	10	.0	29
Mechanical	70	<	9
Sales	50	<	36
Other, n.e.c	130	<	73
Technicians	950	.4	(nc)
Computer programmers	510	.2	7
Drafters	70	<	38
Electrical/electronics engineering technicians	280	.1	32
All other engineering technicians	80	<	(nc)
Physical and life science technicians	10	.0	38
Drugs, proprietaries, and sundries (SIC 5120)			
Scientific and technical personnel	4,150	2.0	(nc)
Scientists	1,060	.5	(nc)
Physical scientists	410	.2	3
Life scientists	190	.1	3
Computer analysts	460	.2	2
Managers of scientific and technical personnel	680	.3	6
Engineers	700	.3	(nc)
Electrical/electronics	50	<	0
Mechanical	70	<	22
Sales	460	.2	0
Other, n.e.c	120	.1	4
Technicians	1,710	.8	(nc)
Computer programmers	830	.4	1
Drafters	20	<	6
Electrical/electronics engineering technicians	150	.1	18
Mechanical engineering technicians	160	.1	0
All other engineering technicians	110	<	0
Physical and life science technicians	440	.2	1
Apparel, piece goods, and notions (SIC 5130)			
Scientific and technical personnel	1,800	.8	(nc)
Scientists	540	.2	3
Computer analysts	540	.2	3
Managers of scientific and technical personnel	230	.1	4
Engineers	210	.1	(nc)
Electrical/electronics	10	<	0
Mechanical	20	<	0
Sales	80	<	70
Other, n.e.c	100	<	8

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Apparel, piece goods, and notions (SIC 5130)—continued:			
Technicians	820	0.4	(nc)
Computer programmers	570	.3	15
Drafters	160	.1	11
Electrical/electronics engineering technicians	30	<	33
All other engineering technicians	40	<	(nc)
Physical and life science technicians	20	<	0
Groceries and related products (SIC 5140)			
Scientific and technical personnel	5,280	.6	(nc)
Scientists	1,010	.1	(nc)
Physical scientists	20	.0	10
Life scientists	50	<	10
Computer analysts	940	.1	3
Managers of scientific and technical personnel	550	.1	4
Engineers	790	.1	(nc)
Electrical/electronics	130	<	13
Mechanical	210	<	15
Sales	310	<	<
Other, n.e.c	140	<	27
Technicians	2,930	.3	(nc)
Computer programmers	1,960	.2	2
Drafters	150	<	6
Electrical/electronics engineering technicians	300	<	23
Mechanical engineering technicians	50	<	15
All other engineering technicians	180	<	26
Physical and life science technicians	290	<	22
Farm-product raw materials (SIC 5150)			
Scientific and technical personnel	400	.4	(nc)
Scientists	110	.1	(nc)
Life scientists	50	<	13
Computer analysts	60	<	3
Managers of scientific and technical personnel	20	<	4
Engineers	40	<	(nc)
Mechanical	20	<	0
Other, n.e.c	20	<	(nc)
Technicians	230	.2	(nc)
Computer programmers	130	.1	3
Drafters	10	<	0
Electrical/electronics engineering technicians	30	<	34
All other engineering technicians	30	<	0
Physical and life science technicians	30	<	4

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Chemicals and allied products (SIC 5160)			
Scientific and technical personnel	5,070	3.4	(nc)
Scientists	1,220	.8	(nc)
Physical scientists	1,040	.7	5
Life scientists	90	.1	55
Computer analysts	90	.1	7
Managers of scientific and technical personnel	370	.2	2
Engineers	1,740	1.2	(nc)
Electrical/electronics	40	<	46
Mechanical	210	.1	14
Sales	1,120	.8	11
Other, n.e.c	370	.2	11
Technicians	1,740	1.2	(nc)
Computer programmers	150	.1	4
Drafters	30	<	0
Electrical/electronics engineering technicians	350	.2	14
Mechanical engineering technicians	70	<	33
All other engineering technicians	160	.1	16
Physical and life science technicians	980	.7	4
Petroleum and petroleum products (SIC 5170)			
Scientific and technical personnel	2,190	1.3	(nc)
Scientists	550	.3	(nc)
Physical scientists	100	.1	7
Life scientists	20	<	0
Computer analysts	430	.3	2
Managers of scientific and technical personnel	210	.1	4
Engineers	660	.4	(nc)
Mechanical	120	.1	7
Sales	70	<	17
Other, n.e.c	470	.3	(nc)
Technicians	770	.5	(nc)
Computer programmers	260	.2	3
Drafters	60	<	13
Electrical/electronics engineering technicians	170	.1	26
Mechanical engineering technicians	50	<	21
All other engineering technicians	160	.1	13
Physical and life science technicians	70	<	18
Beer, wine, and distilled beverages (SIC 5180)			
Scientific and technical personnel	660	.4	(nc)
Scientists	140	.1	(nc)
Life scientists	10	<	11
Computer analysts	130	.1	7

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Beer, wine, and distilled beverages (SIC 5180)—continued:			
Managers of scientific and technical personnel	50	<	4
Engineers	70	<	(nc)
Electrical/electronics	20	<	20
Mechanical	40	<	4
Other, n.e.c	10	.0	17
Technicians	400	.2	(nc)
Computer programmers	200	.1	7
Drafters	20	<	31
Physical and life science technicians	180	.1	0
Misc. nondurable goods (SIC 5190)			
Scientific and technical personnel	4,090	.8	(nc)
Scientists	1,310	.3	(nc)
Physical scientists	230	<	30
Life scientists	540	.1	8
Computer analysts	540	.1	4
Managers of scientific and technical personnel	520	.1	9
Engineers	320	.1	(nc)
Electrical/electronics	40	<	3
Mechanical	60	<	4
Sales	120	<	13
Other, n.e.c	100	<	28
Technicians	1,940	.4	(nc)
Computer programmers	800	.2	4
Drafters	30	<	13
Electrical/electronics engineering technicians	610	.1	60
All other engineering technicians	60	<	(nc)
Physical and life science technicians	440	.1	9
Lumber and other building materials (SIC 5210)			
Scientific and technical personnel	2,230	.4	(nc)
Scientists	350	.1	3
Computer analysts	350	.1	3
Managers of scientific and technical personnel	100	<	4
Engineers	190	<	(nc)
Mechanical	10	.0	18
Sales	140	<	12
Other, n.e.c	40	<	(nc)
Technicians	1,590	.3	(nc)
Computer programmers	350	.1	4
Drafters	1,120	.2	10

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Lumber and other building materials (SIC 5210)—continued:			
All other engineering technicians	120	<	(nc)
Paint, glass, and wallpaper stores (SIC 5230)			
Scientific and technical personnel	120	.2	(nc)
Scientists	40	.1	(nc)
Computer analysts	40	.1	(nc)
Managers of scientific and technical personnel	20	<	0
Technicians	60	.1	(nc)
Computer programmers	20	<	0
Drafters	20	<	23
All other engineering technicians	10	<	(nc)
Physical and life science technicians	10	<	0
Hardware stores (SIC 5250)			
Scientific and technical personnel	300	.2	(nc)
Scientists	240	.1	(nc)
Physical scientists	10	.0	0
Computer analysts	230	.1	(nc)
Managers of scientific and technical personnel	10	<	0
Engineers	10	.0	(nc)
Technicians	40	<	41
Drafters	40	<	41
Retail nurseries and garden stores (SIC 5260)			
Scientific and technical personnel	140	.1	(nc)
Engineers	20	<	42
Sales	20	<	42
Technicians	120	.1	(nc)
Computer programmers	10	<	33
Drafters	110	.1	11
Department stores (SIC 5310)			
Scientific and technical personnel	5,390	.2	(nc)
Scientists	1,640	.1	3
Computer analysts	1,640	.1	3
Managers of scientific and technical personnel	890	<	11
Engineers	1,350	.1	(nc)
Electrical/electronics	130	<	6
Mechanical	380	<	3
Sales	730	<	10

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Department stores (SIC 5310)—continued:			
Other, n.e.c	110	0.0	7
Technicians	1,510	.1	(nc)
Computer programmers	950	<	3
Drafters	300	<	4
Electrical/electronics engineering technicians	140	<	46
Mechanical engineering technicians	20	.0	0
All other engineering technicians	100	.0	22
Variety stores (SIC 5330)			
Scientific and technical personnel	310	.2	(nc)
Scientists	70	<	0
Computer analysts	70	<	0
Managers of scientific and technical personnel	40	<	0
Engineers	30	<	(nc)
Technicians	170	.1	(nc)
Computer programmers	160	.1	0
Drafters	10	<	0
Misc. general merchandise stores (SIC 5390)			
Scientific and technical personnel	230	.1	(nc)
Scientists	150	.1	(nc)
Computer analysts	150	.1	(nc)
Technicians	80	<	16
Computer programmers	80	<	16
Grocery stores (SIC 5410)			
Scientific and technical personnel	1,880	.1	(nc)
Scientists	520	<	3
Computer analysts	520	<	3
Managers of scientific and technical personnel	190	<	4
Engineers	140	.0	(nc)
Electrical/electronics	20	.0	0
Mechanical	10	.0	0
Sales	50	.0	36
Other, n.e.c	60	.0	12
Technicians	1,030	<	(nc)
Computer programmers	870	<	19
Drafters	90	.0	0
Electrical/electronics engineering technicians	40	.0	0
All other engineering technicians	30	.0	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

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Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Fruit and vegetable markets (SIC 5430)			
Scientific and technical personnel	10	<	(nc)
Engineers	10	<	(nc)
Miscellaneous food stores (SIC 5490)			
Scientific and technical personnel	10	<	0
Technicians	10	<	0
Physical and life science technicians	10	<	0
New and used car dealers (SIC 5510)			
Scientific and technical personnel	60	<	(nc)
Managers of scientific and technical personnel	10	.0	71
Technicians	50	<	77
Computer programmers	50	<	77
Auto and home supply stores (SIC 5530)			
Scientific and technical personnel	320	.1	(nc)
Scientists	80	<	4
Computer analysts	80	<	4
Managers of scientific and technical personnel	10	.0	0
Engineers	80	<	(nc)
Sales	50	<	0
Technicians	150	<	0
Computer programmers	150	<	0
Gasoline service stations (SIC 5540)			
Scientific and technical personnel	470	.1	(nc)
Scientists	230	<	(nc)
Physical scientists	20	.0	0
Computer analysts	210	<	0
Managers of scientific and technical personnel	50	<	0
Engineers	50	.0	(nc)
Technicians	140	<	(nc)
Computer programmers	50	<	5
Drafters	60	<	0
All other engineering technicians	20	.0	(nc)
Physical and life science technicians	10	.0	0
Automotive dealers, n.e.c. (SIC 5590)			
Scientific and technical personnel	10	.1	0
Technicians	10	.1	0

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Automotive dealers, n.e.c. (SIC 5590)—continued:			
Physical and life science technicians	10	0.1	0
Men's and boys' clothing stores (SIC 5610)			
Scientific and technical personnel	70	.1	(nc)
Scientists	20	<	6
Computer analysts	20	<	6
Managers of scientific and technical personnel	20	<	0
Technicians	30	<	5
Computer programmers	30	<	5
Women's clothing stores (SIC 5620)			
Scientific and technical personnel	1,250	.4	(nc)
Scientists	100	<	7
Computer analysts	100	<	7
Managers of scientific and technical personnel	20	<	0
Engineers	790	.2	(nc)
Sales	780	.2	88
Technicians	340	.1	4
Computer programmers	340	.1	4
Women's accessory and specialty stores (SIC 5630)			
Scientific and technical personnel	120	.2	(nc)
Scientists	80	.1	(nc)
Computer analysts	80	.1	(nc)
Technicians	40	.1	0
Computer programmers	40	.1	0
Children's and infants' wear stores (SIC 5640)			
Scientific and technical personnel	40	.1	(nc)
Scientists	30	.1	(nc)
Computer analysts	30	.1	(nc)
Technicians	10	<	0
Computer programmers	10	<	0
Family clothing stores (SIC 5650)			
Scientific and technical personnel	620	.2	(nc)
Scientists	230	.1	(nc)
Computer analysts	230	.1	(nc)
Managers of scientific and technical personnel	30	<	3

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Family clothing stores (SIC 5650)—continued:			
Engineers	50	<	(nc)
Mechanical	30	<	0
Other, n.e.c	20	.0	(nc)
Technicians	310	.1	(nc)
Computer programmers	300	.1	8
Drafters	10	.0	0
Shoe stores (SIC 5660)			
Scientific and technical personnel	290	.1	(nc)
Scientists	100	<	1
Computer analysts	100	<	1
Managers of scientific and technical personnel	20	<	11
Engineers	10	.0	(nc)
Technicians	160	.1	8
Computer programmers	160	.1	8
Misc. apparel and accessory stores (SIC 5690)			
Scientific and technical personnel	160	.2	(nc)
Scientists	100	.1	(nc)
Computer analysts	100	.1	(nc)
Managers of scientific and technical personnel	20	<	46
Engineers	10	<	(nc)
Technicians	30	<	25
Computer programmers	30	<	25
Furniture and homefurnishings stores (SIC 5710)			
Scientific and technical personnel	770	.2	(nc)
Scientists	160	<	13
Computer analysts	160	<	13
Managers of scientific and technical personnel	60	<	19
Technicians	550	.1	(nc)
Computer programmers	390	.1	15
Drafters	160	<	40
Household appliance stores (SIC 5720)			
Scientific and technical personnel	140	.2	(nc)
Scientists	80	.1	(nc)
Life scientists	20	<	77
Computer analysts	60	.1	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Household appliance stores (SIC 5720)—continued:			
Technicians	60	0.1	(nc)
Computer programmers	20	<	0
Electrical/electronics engineering technicians	40	<	5
Radio, television, and computer stores (SIC 5730)			
Scientific and technical personnel	7,370	2.2	(nc)
Scientists	1,190	.4	17
Computer analysts	1,190	.4	17
Managers of scientific and technical personnel	360	.1	14
Engineers	1,430	.4	(nc)
Electrical/electronics	250	.1	12
Mechanical	10	.0	26
Sales	220	.1	16
Other, n.e.c	950	.3	48
Technicians	4,390	1.3	(nc)
Computer programmers	3,280	1.0	18
Drafters	30	<	38
Electrical/electronics engineering technicians	800	.2	14
All other engineering technicians	280	.1	(nc)
Eating and drinking places (SIC 5810)			
Scientific and technical personnel	370	.0	(nc)
Scientists	160	.0	(nc)
Computer analysts	160	.0	(nc)
Managers of scientific and technical personnel	30	.0	3
Engineers	10	.0	(nc)
Technicians	170	.0	(nc)
Computer programmers	160	.0	78
Physical and life science technicians	10	.0	81
Drug stores and proprietary stores (SIC 5910)			
Scientific and technical personnel	670	.1	(nc)
Scientists	340	.1	(nc)
Computer analysts	340	.1	(nc)
Managers of scientific and technical personnel	80	<	4
Engineers	30	.0	(nc)
Technicians	220	<	14
Computer programmers	220	<	14

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Liquor stores (SIC 5920)			
Scientific and technical personnel	70	0.1	67
Engineers	70	.1	67
Sales	70	.1	67
Used merchandise stores (SIC 5930)			
Scientific and technical personnel	10	<	12
Scientists	10	<	12
Computer analysts	10	<	12
Miscellaneous shopping goods stores (SIC 5940)			
Scientific and technical personnel	1,690	.2	(nc)
Scientists	400	<	9
Computer analysts	400	<	9
Managers of scientific and technical personnel	190	<	9
Engineers	480	<	(nc)
Sales	440	<	42
Technicians	620	.1	(nc)
Computer programmers	610	.1	7
Physical and life science technicians	10	.0	0
Fuel dealers (SIC 5980)			
Scientific and technical personnel	130	.1	(nc)
Scientists	10	<	19
Computer analysts	10	<	19
Managers of scientific and technical personnel	10	<	9
Engineers	60	.1	(nc)
Sales	50	<	19
Technicians	50	<	(nc)
Computer programmers	30	<	6
Physical and life science technicians	20	<	53
Retail stores, n.e.c. (SIC 5990)			
Scientific and technical personnel	480	.1	(nc)
Scientists	100	<	(nc)
Life scientists	10	.0	40
Computer analysts	90	<	16
Managers of scientific and technical personnel	30	<	15
Engineers	20	.0	(nc)
Technicians	330	.1	(nc)

See explanatory information and SOURCE at end of table.

Table A-5. Scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Retail stores, n.e.c. (SIC 5990)—continued:			
Computer programmers	100	<	15
Drafters	60	<	42
All other engineering technicians	120	<	(nc)
Physical and life science technicians	50	<	20

NOTE: Because of rounding, components may not add to totals.

KEY: nc = not computed
< = The estimated actual value is less than 50 for numbers and less than .05 for percentages.
0 = Data were collected and the reported number or value was zero.
n.e.c. = not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-6. R&D scientific, engineering, and technical (SET) personnel and SET managers in trade and regulated industries, by detailed industry of employment: 1994

(Filled jobs in thousands)

Page 1 of 1

Detailed industry	Total SET personnel		SET personnel managers		Scientists		Engineers		Technicians	
	Number	Pct	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Total trade and regulated	1.7	100.0	0.4	100.0	0.2	100.0	1.0	100.0	<	100.0
Transportation, communications, and utilities	1.7	100.0	.4	100.0	.2	100.0	1.0	100.0	<	100.0
Communications	.7	42.5	.2	50.0	.1	39.1	.4	37.1	<	100.0
Telephone communications	.6	34.1	.2	40.5	.1	39.1	.3	32.0	.0	.0
Telegraph and other communications	<	3.0	<	7.1	.0	.0	<	2.1	.0	.0
Radio and television broadcasting	.1	3.6	.0	.0	.0	.0	<	1.0	<	100.0
Cable and other pay TV services	<	.6	<	2.4	.0	.0	.0	.0	.0	.0
Communications services, n.e.c.	<	1.2	.0	.0	.0	.0	<	2.1	.0	.0
Utilities and sanitary services	1.0	57.5	.2	50.0	.1	60.9	.6	62.9	.0	.0
Electric services	<	2.4	<	2.4	.0	.0	<	3.1	.0	.0
Gas production and distribution	<	.6	.0	.0	.0	.0	<	1.0	.0	.0
Combination utility services	.8	46.1	.1	16.7	.1	60.9	.6	57.7	.0	.0
Water supply	<	1.8	<	4.8	.0	.0	<	1.0	.0	.0
Sanitary services	.1	6.6	.1	26.2	.0	.0	.0	.0	.0	.0

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.
n.e.c. = not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-7. R&D scientists in trade and regulated industries, by broad industry group of employment and detailed occupation: 1994

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Physical	Life	Social	Computer
Total trade and regulated	0.2	0.1	0.0	<	0.1
Transportation, communications, and public utilities	.2	.1	.0	<	.1
Communications	.1	.0	.0	.0	.1
Utilities and sanitary services	.1	.1	.0	<	<

NOTE: Because of rounding, components may not add to totals.

KEY:
< = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-8. R&D engineers in trade and regulated industries, by broad industry group of employment and detailed occupation: 1994

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Civil	Electrical/ electronics	Computer	Industrial	Other
Total trade and regulated	1.0	<	<	<	0.1	0.8
Transportation, communications, and public utilities	1.0	<	<	<	.1	.8
Communications	.4	.0	.0	<	.0	.3
Utilities and sanitary services	.6	<	<	.0	.1	.5

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-9. R&D technicians in trade and regulated industries, by broad industry group of employment and detailed occupation: 1994

(Filled jobs in thousands)

Page 1 of 1

Broad industry group of employment	Total	Science	Engineering		
			Total	Electrical/ electronics	Other
Total trade and regulated	0.4	0.0	0.3	0.1	0.2
Transportation, communications, and public utilities	.4	.0	.3	.1	.2
Communications	.3	.0	.3	.1	.2
Utilities and sanitary services	<	.0	.0	.0	.0

NOTE: Because of rounding, components may not add to totals.

KEY: < = The estimated actual value is less than 50.
0 = Data were collected and the reported number or value was zero.

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

Table A-10. R&D scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Page 1 of 2

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Telephone communications (SIC 4810)			
Scientific and technical personnel	570	0.1	(nc)
Scientists	90	<	(nc)
Computer analysts	90	<	(nc)
Managers of scientific and technical personnel	170	<	50
Engineers	310	<	(nc)
Telegraph and other communications (SIC 4820)			
Scientific and technical personnel	50	.7	(nc)
Managers of scientific and technical personnel	30	.5	76
Engineers	20	.3	(nc)
Radio and television broadcasting (SIC 4830)			
Scientific and technical personnel	60	<	(nc)
Engineers	10	.0	(nc)
Electrical/electronics	10	.0	29
Technicians	50	<	65
Electrical/electronics engineering technicians	50	<	65
Cable and other pay TV services (SIC 4840)			
Scientific and technical personnel	10	<	12
Managers of scientific and technical personnel	10	<	12
Communications services, n.e.c. (SIC 4890)			
Scientific and technical personnel	20	.1	(nc)
Engineers	20	.1	(nc)
Electric services (SIC 4910)			
Scientific and technical personnel	40	.0	(nc)
Managers of scientific and technical personnel	10	.0	22
Engineers	30	.0	(nc)
Gas production and distribution (SIC 4920)			
Scientific and technical personnel	10	<	(nc)
Engineers	10	<	(nc)
Combination utility services (SIC 4930)			
Scientific and technical personnel	710	.4	(nc)
Scientists	80	<	(nc)
Computer analysts	80	<	(nc)

See explanatory information and SOURCE at end of table.

Table A-10. R&D scientists, engineers, and technicians in trade and regulated industries as a percentage of total industry employment, and the relative standard error: 1994

Page 2 of 2

Industry and occupation	Total	Percentage of total industry employment	Relative standard error
Combination utility services (SIC 4930)—continued:			
Managers of scientific and technical personnel	70	<	0
Engineers	560	.3	(nc)
Water supply (SIC 4940)			
Scientific and technical personnel	30	.1	(nc)
Managers of scientific and technical personnel	20	.1	17
Engineers	10	<	(nc)
Sanitary services (SIC 4950)			
Scientific and technical personnel	110	.1	7
Managers of scientific and technical personnel	110	.1	7

NOTE: Because of rounding, components may not add to totals.

KEY:
nc = not computed
< = The estimated actual value is less than 50 for numbers and less than .05 for percentages.
0 = Data were collected and the reported number or value was zero.
n.e.c. = not elsewhere classified

SOURCE: National Science Foundation/SRS, using data from U.S. Department of Labor/Bureau of Labor Statistics, Occupational Employment Statistics Survey

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